

ABSTRACT

An apparatus for the application of coatings in a vacuum comprising a plasma duct surrounded by a magnetic deflecting system communicating with a first plasma source and a coating chamber in which a substrate holder is arranged off of an optical axis of the plasma source, has at least one deflecting electrode mounted on one or more walls of the plasma duct. In one embodiment an isolated repelling or repelling electrode is positioned in the plasma duct downstream of the deflecting electrode where the tangential component of a deflecting magnetic field is strongest, connected to the positive pole of a current source which allows the isolated electrode current to be varied independently and increased above the level of the anode current. The deflecting electrode may serve as a getter pump to improve pumping efficiency and divert metal ions from the plasma flow. In a further embodiment a second arc source is activated to coat the substrates while a first arc source is activated, and the magnetic deflecting system for the first arc source is deactivated to confine plasma to the cathode chamber but permit electrons to flow into the coating chamber for plasma immersed treatment of the substrates. A load lock shutter may be provided between the plasma duct and the coating chamber further confine the plasma from the first arc source.